ABSTRACT:

Defect-free highperformancemembranes for O2/N2separation were prepared by coating the porous polyethersulphone (PES) membrane of hyperthin-skin layer with silicone rubber. The combined effects of fabrication parameters in dry/wet phase inversion process and of the casting dope rheology enabled improved of membraneperformance in O2 and N2separation, i.e. the optimum range was found to be from 149 to 447 s- 1 and 10 to 14 s, respectively, for the shear rate and the evaporation time to prepare the hyperthin-skinnedasymmetricpolyethersulfonemembranes. The optimum polymer concentration was 32 wt.% , 61 wt.% and 7 wt.% for PES, 1-methyl-2-pyrrolidone and water respectively. The thinnest skin layer thickness was 538 ± 95.6 Å. Evaporation time and casting shear have been identified as the dominant fabrication parameters in controlling skin layer thickness and skin integrity.